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Report of the Secretary for the year end



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CANADIAN SEED GROWERS' ASSOCIATION

CANADIAN BUILDING, OTTAWA, CANADA

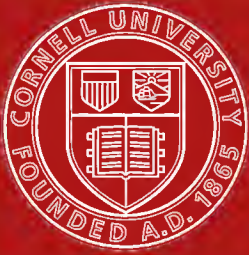
REPORT OF THE SECRETARY

FOR THE

YEAR ENDING JUNE 30, 1907.

Published by Order of the Executive Council

OTTAWA
GOVERNMENT PRINTING BUREAU.
1907



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PREFACE.

A special meeting of the Executive Council of the Canadian Seed Growers' Association was held on July 5, 1907, at Macdonald College, Ste. Anne de Bellevue, Que., for the purpose of transacting the business of the annual meeting for the association year ending June 30, 1907.

Heretofore the annual meeting of the association has been held at Ottawa during the month of June, but this year it was decided to change the date for holding this meeting to some time earlier in the year when Parliament would be in session and when for various other good reasons it would be more desirable to convene.

The report of the secretary, as presented before the above meeting, and which is here published in part, deals with the work which is being done throughout all parts of Canada, and shows the place which this line of work is taking in agricultural practice.

L. H. N.

CANADIAN SEED GROWER'S ASSOCIATION

HEAD OFFICE: CANADIAN BUILDING, OTTAWA, ONT.

LIST OF OPERATING MEMBERS, 1906.

The following list gives the names and addresses of the members from whom reports were received for 1906, together with the kinds and varieties of crops with which they are operating, and the number of consecutive years which the seed has been selected:—

WHEAT.

ALBERTA.

Hecko, Peter, Clover Bar, Edmonton County, Red Fife, 1 year.
Woolford, Thos. H., Cardston, Alberta County, Turkey Red, 2 years.

SASKATCHEWAN.

Abrams, Peter, Rosthern, Saskatchewan County, Red Fife, 1 year.
Black, W. M., Creelman, Qu'Appelle County, Red Fife, 4 years.
Coles, F., Moffat, Wolseley County, Preston, 3 years.
Dash, F. J., Hillesden, Assiniboia, East County, Red Fife, 6 years.
Gibson, H., Wolseley, Qu'Appelle County, Red Fife, 3 years.
Howard Bros., Forest Farm, Assiniboia East County, White Fife.
Kirkham, F., & Sons, Saltcoats, Assiniboia East County, White Fife, 7 years.
Methven, Alex., Perley, Assiniboia East County, Preston, 1 year.
Ramsay, W. L., Bladworth, Humboldt County, Preston.
Telfer, Jno., South Melfort, Humboldt County, Red Fife.

MANITOBA.

Bradshaw, Geo. H. Morden, Stanley County, Red Fife, 1 year.
Dow Brothers, Gilbert Plains, Dauphin County, Red Fife, 2 years.
Henry, J. L., Beaver, Macdonald County, Red Fife.
Lumb Brothers, Cartwright, Souris County, Red Fife, 4 years.
Mooney, Jno., Valley River, Dauphin County, Red Fife, 4 years.
Thomson, Thos., Roden, Brandon County, Red Fife, 7 years.
Yeomans, G. M., Alexander, Brandon County, Preston.

ONTARIO.

Davidson, W. L., Davidson's Hill, Shefford County, White Fife, 3 years.
Gies, C. R., Heidelberg, Waterloo County, Dawson's Golden Chaff, 7 years.
McKay, Robert, Maxville, Glengarry County, Red Fife, 6 years.
Tremblay, Jos. Ely, Hébertville, Lac St. Jean, Red Fife.

QUEBEC.

Davidson, W. L., Davidson Hill, Shefford County, White Fife, 3 years.
Levasseur, Jérémie, Tessierville, Rimouski County, Campbell's W. Chaff, 7 years.
Perron, Jos., Les Eboulements, Charlevoix County, Perron, 7 years.
Tremblay, Philippe, Les Eboulements, Charlevoix County, Perron.
Tremblay, Jos. Elz., Hébertville, Lac St. Jean, Red Fife.

NEW BRUNSWICK.

Crewdson, Jno., Burden, York County, Red Fife, 7 years.
 Innes, Donald, Tobique River, Victoria County, White Fife, 7 years.
 Proudfoot, David, Mt. Pisgah, King's and Albert Counties, White Russian, 6 years.

NOVA SCOTIA.

Eadie, Harry, Antigonish, Antigonish County, Red Fife, 1 year.
 Mackay, Robert, Millsville, Pictou County, Red Fife, 7 years.

PRINCE EDWARD ISLAND.

Arsenault, Elie E., Urbinville, Prince County, White Russian, 1 year.
 McMillan, Gordon, New Haven, Queen's County, White Fife, 7 years.
 Waugh, Thos., North Bedeque, Prince County, White Russian, 7 years.
 Wigginton, T. J., Bridgetown, King's County, White Russian, 4 years.

OATS.

ALBERTA.

Lee, T. H., Bowden, Calgary County, Quaker.

SASKATCHEWAN.

Black, W. M., Creelman, Qu'Appelle County, Banner, 1 year.
 Gibson, Hugh, Wolseley, Qu'Appelle County, Banner, 3 years.
 Kirkham, F., & Sons, Saltcoats, Qu'Appelle County, Danish White, 6 years.

MANITOBA.

Bradshaw, Geo. H., Morden, Stanley County, Banner, 1 year.
 Dow Brothers, Gilbert Plains, Dauphin County, Banner, 6 years.
 Lumb Brothers, Cartwright, Souris County, Banner, 1 year.

ONTARIO.

Boyce, Geo., Merivale, Carleton County, Banner, 6 years.
 Carmichael, Duncan, West Lorne, Elgin County, Ligowa, 2 years.
 Dixon, W. L., Dromore, Grey County, Banner, 6 years.
 Kennedy, W., Apple Hill, Glengarry County, Banner.
 Prouse, David, Goderich, Huron County, Newmarket, 7 years.
 Ramage, W., Thistle, Grey County, Tartar King, 3 years.

QUEBEC.

Boulet, L., Ste. Hénédine, Dorchester County, Banner, 2 years.
 Bélanger, Cyprien, Trois Pistoles, Témiscouata County, Tartar King, 7 years.
 Cloutier, Michel, St. Pierre, Montmagny County, Banner, 1 year.
 Davidson, W. L. Davidson's Hill, Shefford County, Banner, 3 years.
 Gérin, Léon, Coaticook, Stanstead County, Early Prize Cluster, 2 years.
 Gagné, Jos., L'Islet Station, L'Islet County, Waverly.
 Gagné, F., L'Islet Station, L'Islet County, Siberian.
 Lafrenaie, S., St. Jude, St. Hyacinthe County, Banner, 1 year.
 Levasseur, J., Tessierville, Rimouski County, Tartar King.
 Levasseur, J., Tessierville, Rimouski County, Banner, 7 years.
 Matthews, Gilbert, Lachute Mills, Argenteuil County, Banner, 7 years.
 Pintal, Gus., Champlain, Champlain County, Banner.
 Roy, N., Ste. Hénédine, Dorchester County, Banner, 1 year.
 Trépanier, Henri, St. Stanislas, Champlain County, Banner, 4 years.

NEW BRUNSWICK.

Ferguson, Jno., Lower Queensbury, York County, Early Triumph, 7 years.
 Innes Donald, Tobique River, Victoria County, Early Blossom, 7 years.
 Simpson, W. B., Waweig, Charlotte County, Banner.
 Moore, Wm. H., Scotch Lake, York County, Banner, 7 years.

NOVA SCOTIA.

Brown, Harry, Wallace Bay, Cumberland County, Banner, 5 years.
 Long, Jno., Dalhousie East, Annapolis County, Banner, 6 years.
 McKay, Robert, Millsville, Pictou County, Manitoba, 6 years.
 Wright, Wm. O., Dalhousie East, King's County, American Beauty, 4 years.

PRINCE EDWARD ISLAND.

Creed, Richard, Albion, King's County, White Egyptian, 7 years.
 Marchbank, Jas., New Annan, Prince County, Black Tartarian, 7 years.
 Marchbank, Jas., New Annan, Prince County, Banner, 7 years.
 McKenna, Michael, Newton, Prince County, Banner, 7 years.
 Rodd, Ira L., North Milton, Queen's County, Black Norway.
 Waugh, Thos., North Bedeque, Prince County, Gothland.
 Waugh, Thos., North Bedeque, Prince County, Danish Island, 3 years.
 Waugh, Thos., North Bedeque, Prince County, Banner, 2 years.

BARLEY.

MANITOBA.

Bradshaw, Geo. H., Morden, Stanley County, Mandscheuri, 1 year.
 Black, W. M., Creelman, Qu'Appelle County, Mensury.
 Lumb Brothers, Cartwright, Souris County, Mensury, 1 year.
 Skaife, Maurice, Ethelbert, Dauphin County, Odessa.

ONTARIO.

Carmichael, Duncan, West Lorne, Elgin County, Mensury, 4 years.
 Carmichael, Duncan, West Lorne, Elgin County, Mandscheuri, 2 years.
 Mackey, Chas. Kinsale, Ontario County, Mandscheuri, 4 years.

QUEBEC.

Davidson, W. L., Davidson's Hill, Shefford County, Duckbill, 2 years.
 Davidson, W. L., Davidson's Hill, Shefford County, Western Beauty, 2 years.
 Gérin, Léon, Coaticook, Stanstead County, Duckbill, 2 years.
 Rousseau, H. J., Trois Pistoles, Témiscouata.

NEW BRUNSWICK.

Innes, Donald, Tobique River, Victoria County, Mensury, 2 years.

INDIAN CORN.

ONTARIO.

Duke, J. O., Olinda, Essex County, Evergreen Sweet, 3 years.
 Carmichael, A., West Lorne, Elgin County, King Phillip, 1 year.
 Hankinson, L., Grovesend, Elgin County, Yellow Flint (str.), 2 years.
 Hubbs, Louis, Hillier, Prince Edward Co., Evergreen Sweet, 2 years.
 Laird, J. O., Blenheim, Kent County, Reid's Yellow Dent, 2 years.
 McKee, Jno., Norwich, Oxford County, Stowell's Evergreen.
 Pearce, Chas., Wellington, Prince Edward County, Stowell's Evergreen, 2 years.
 Thompson, D. G., Cumming's Bridge, Russell County, Northern King, 2 years.
 Thomas, J. C., Blytheswood, Essex County, White Cap Y. Dent, 2 years.
 Ure, Wm., Windsor, Essex County, Yellow Dent, 2 years.
 Van Sickle, Abr., Onondaga, Brant County, Leaming, 1 year.

QUEBEC.

Davidson, W. L., Davidson's Hill, Shefford County, Mensury, 3 years.
 Jamieson, Norman, Waterloo, Shefford County.

PEASE.

NEW BRUNSWICK.

Innes, Donald, Tobique River, Victoria County, White Marrowfat, 2 years.

POTATOES.

MANITOBA.

Orchard, Harold, Lintrathen, Macdonald County, Honey Eye Rose.

NOVA SCOTIA.

Brown, Harry R., Wallace Bay, Cumberland County, Green Mountain, 1 year.



FIG. 1.—Preston wheat, showing characteristic variations

REPORT OF THE SECRETARY

MR. PRESIDENT AND GENTLEMEN,—I beg to submit for your consideration my second annual report as secretary for the Canadian Seed Growers' Association. It is gratifying to be able to report another year of steady and continued progress in the growth of the association. The influence of the work which is being carried on throughout all parts of Canada is having a more potent effect upon the farming community in general as time passes, and many farmers are now giving greater attention to the quality of the seed they are using and to the source from which this seed is secured.

For the healthy and prosperous condition which the association now enjoys we are much indebted to the hearty support and encouragement received from the Dominion Department of Agriculture through its Seed Branch, and to the various provincial departments throughout Canada. The experimental farms, agricultural colleges, and many of the schools throughout the country have likewise shown their interest and sympathy in the work, and have contributed materially in promoting its interests.

The general awakening of thought and practice along the lines in question also owes much to the encouragement offered by the press of the country and by the leaders in agricultural work. As time passes problems of great perplexity and importance are being worked out slowly, and at times unconsciously, by those who work first-handed with the forces that make for wealth. The great scope for well-doing which lies within the power of this large and far-reaching organization is coming to be realized more and more by the farmers themselves, which fact has gone far to stimulate an increased incentive to earnest effort in their behalf.

In this report I shall endeavour to give the present standing of the association, to show the possibilities of the work, and some of the results for the past year.

With the closer relationship of the association to agricultural practice there has come an increased membership. The list of members, found in another part of this report, is composed largely of our brightest and most progressive farmers, whose good work in their respective communities is doing much for the cause of crop improvement. This list, though a substantial one, does not give an adequate idea of the actual place which the work of the association is taking in the rural districts, as many farmers are carrying out the work themselves independent of direct affiliation with the organization.

During the year a large number of growers have reported upon the results of their work. While a few have been unfortunate in their endeavours, yet the majority of these are not discouraged, and are continuing their work this year with renewed vigour. The number from whom satisfactory reports have been received for the year 1906-7 is eighty-one, fifty-seven of whom have already been voted in as members in full standing. This leaves twenty-four applicants who have carried out the work satisfactorily for one year, and who are thus eligible for membership. Only those who have complied fully with the regulations are included in this number.

The number who have applied to take up the work during the year, together with those older applicants who have not yet complied with the regulations sufficiently to entitle them to full membership, are listed according to the crops which the various applicants in each district expect to grow, as follows:—

	Maritime District.	Quebec.	Ontario.	Manitoba.	Saskatche- wan.	Alta and British Columbia.	Total.
Seed wheat growers.....	17	9	19	19	26	23	113
Seed oats growers	25	13	49	9	6	19	121
Seed barley growers.....	6	0	23	6	4	3	42
Growers of seed corn	2	3	72	1	1	0	79
Potato growers.....	10	3	25	1	3	3	45
Growers of seed of miscellaneous crops ...	14	18	17	4	3	5	61
Total ...	74	46	205	40	43	53	461

SUMMARY.

Total number of applicants	461
Number of old members reporting satisfactorily.....	57
Number of old members failing to report.....	15
Number of applicants reporting satisfactorily.....	24
Total number of members in full standing.....	96

Total number now affiliated with the association..... 557

Since some growers are operating with more than one class of crop the list as given above represents somewhat more than the actual number of individual growers.

Many more who for various reasons are not operating this year, but wish to take up the work in a year or two, are placed among the 'Prospective Members' in order to prevent the application list from becoming too unwieldy and yet enable us to keep in close touch with them.

KEEPING OF RECORDS.

In endeavouring to ascertain as closely as possible the value of the strains worked with by each member, very careful records have been kept throughout the year. Before seeding time full directions regarding the sowing, culture, and selection of each class of crop, arranged in consecutive order, together with blanks for taking 'Field Notes' in detail, were sent to each operator. A complete list of all growers operating under the direction of the association in each of the six districts into which Canada has, for convenience, been divided, was also submitted to the various representatives of the Seed Branch, who carefully inspected the operations of our growers in their respective districts and submitted very valuable reports upon the work done. Later in the season the regular 'Record Forms,' calling for detailed records and accompanied by a suitable letter of transmittal, were sent in duplicate to each grower, who was requested to forward to headquarters, for examination, a number of average heads in the case of the smaller cereals, and ears in the case of corn. The information we have been able to get regarding the work of each man from these different sources has been recorded in detail in our Record Book, and, coming from all parts of Canada and from widely varying conditions, has served to spread considerable light upon questions which have long been somewhat perplexing.

WORK WITH THE SMALLER GRAINS.

During the past year the work with the smaller grains has made a steady and very material advance. Not only has the number of operators increased, but what is of



FIG. II.—Heads of Red Fife wheat.

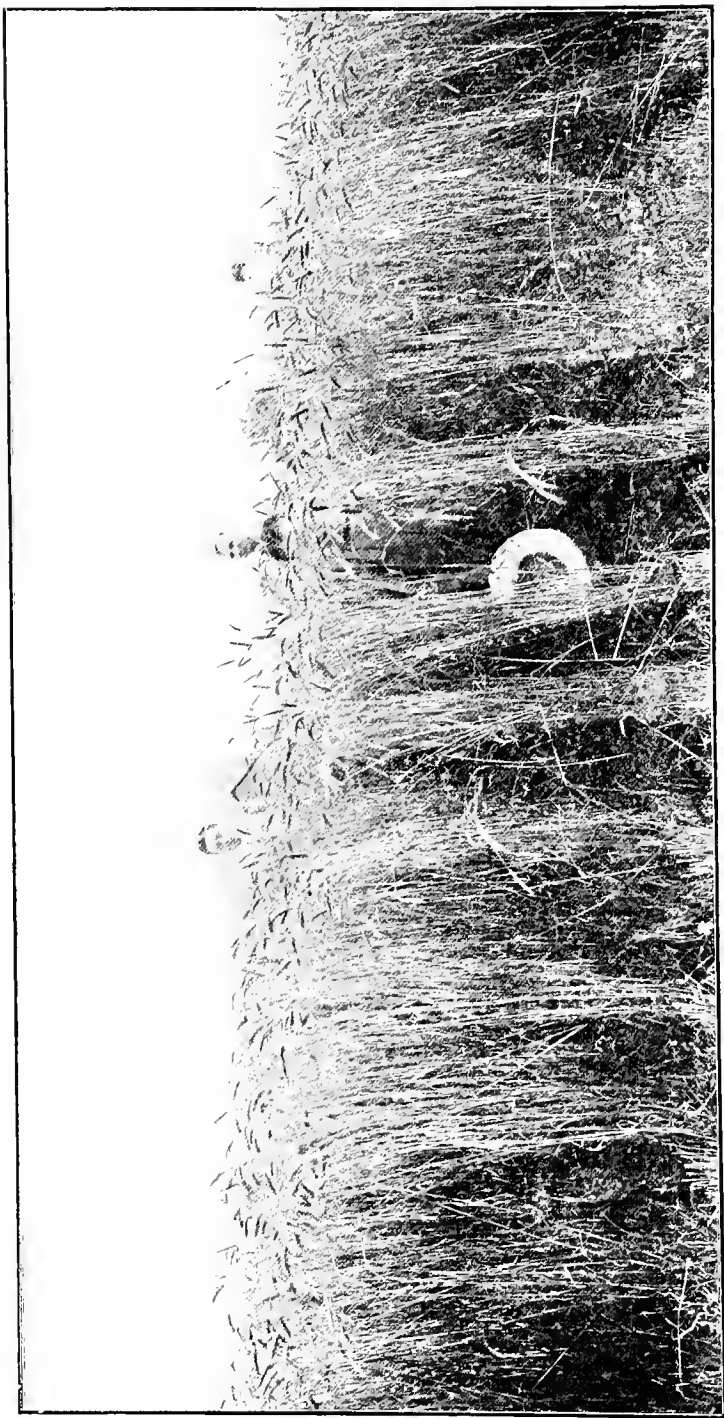


FIG. III.—Breeding Plot of Dawson's Golden Chaff Winter Wheat, grown by C. R. Gies, Heidelberg, Ont.

perhaps greater importance, there has been a very decided advancement in the intelligent interest taken in the work and much has been added to our knowledge as a result. It is gratifying to note the degree in which many of the growers have caught the spirit of the work and have become sensible of the fundamental principles involved. With the increased interest in the improvement of strains there has come a greater tendency on the part of the growers to conduct trials with a few leading varieties of the crop or crops under consideration, and, as a result, many unsuitable varieties have had to give way to others more desirable as foundation stock. The improvement and maintenance of these superior varieties and strains seems to offer great advantages. The degree to which many of our best varieties have become mixed with other less desirable sorts is noteworthy. This intermixture is largely due to carelessness on the part of the grower and to the use of improperly cleaned itinerant threshing machines. Some of these unwelcome kinds mature earlier than does the regular crop and as a result they multiply with great rapidity. As an example of this we find the vagrant variety of wheat known as the Assiniboia Red, which contaminates many of the wheat fields of the West, maturing somewhat earlier and shelling more freely than does the regular crop, and hence establishing itself more firmly as time passes.

Then again we find the different diseases to which these smaller grains are heir very difficult to keep under control in large areas. As a result of these things it is almost impossible to secure with certainty strong, healthy, pure, and uniform seed of high quality in the ordinary manner. This fact explains the growing popularity of the special seed plot of limited area as a place where high class seed may be procured. The using of only the best obtainable seed on clean and well prepared soil, allowing the crop to ripen thoroughly, making it possible to select seed by hand from standing plants of desirable types and in sufficient quantities to perpetuate the same, and threshing and storing separately from other kinds, are the main claims that this system has established thus far in agricultural practice.

While the ultimate aim of the grower is to establish a strain which will yield more bushels of good quality per acre under his conditions than did the original, yet the factors in true breeding are overshadowed by the question of resistance. In Canada as in all other countries there are numerous adverse conditions such as rust, smut, weakness of straw, drouth, impoverished soil, &c., which go to influence the yield and must be carefully considered in selection work. The selecting of plants which have outstripped their neighbours enjoying equal opportunities has, in many cases, proven the utility of the system within the past year.

WHEAT.

While every crop of any considerable consequence is receiving attention, yet the work that is being done in Canada with wheat easily overshadows in importance that which is being carried on with all others. The difficulties which are naturally associated with an extensive system of farming, are met with most in the great wheat-growing districts of the West. Here the wonderful fertility of the land, the congenial climate, and the immensity of the scale upon which farming operations are carried on are potent factors in promoting the growth and spread of noxious weeds, insect pests, and fungous diseases. This fact, and what it means, is already well known to the western grower and the seriousness with which it is being looked upon is evidenced by the increasing number who are welcoming a system which will enable them to keep these things under control.

In Spring Wheats, the Red Fife variety easily maintains the foremost place in the west and in Ontario. In Quebec and New Brunswick White Fife is grown considerably, while in Nova Scotia and Prince Edward Island the White Russian variety, largely because of its hardy qualities, seems to be the favourite. This latter variety, though usually producing grain of poor milling quality, has been induced, in some cases, to give grain of excellent quality and which is well adapted to home consumption. While the head is longer and more open as a rule, than is that of the Red Fife variety, yet under certain circumstances the two may easily be confused.

The Preston variety has also held its own, and being several days earlier than Red Fife is well liked by those members living in the more northern districts, where the season is shorter. One of the greatest objections to this variety, as mostly grown at present, is that the type is not perfectly fixed, and hence the product is lacking in uniformity. This explains the chief reasons why samples of this variety, as seen at exhibitions, appear to be mixed with other varieties. In Fig. 1 is shown three representative heads of Preston taken from a sample of twenty-five heads selected and sent to headquarters by one of our western growers. The heads of this sample resembled each other quite closely in general appearance, yet the grain in some heads differed quite markedly from that found in others, although all the grains within each separate head were practically identical. The more common type of kernel resembled that of the Red Fife, and is shown in bottle (a) in the illustration. Bottle (b) shows the proportion of heads producing a longer and more translucent type of kernel, while bottle (c) shows the proportion of heads producing a shorter and more piebald type of kernel. This latter is simply a case of hardness and may occur in any variety. Dr. C. E. Saunders, Cerealist at the Central Experimental Farm, has been working for some years on some of the more likely types of this variety, with a view to fixing them, and thus eliminating the present difficulty. He has practically succeeded in isolating a superior type which he considers fixed, and which he is sending for further trial to the branch experimental farms. Some excellent types of yellow skinned Preston have also been isolated, but since these have not shown any superiority over the red skinned types and since yellow skinned varieties are somewhat unpopular, they have been dropped. A bulletin is now being published by Dr. Saunders, setting forth the comparative values of different wheats as regards quality for breadmaking and which we recommend our members to secure.

In Fig. 2 is shown a group of three heads of Red Fife wheat. Head No. 1 was selected from the outer edge of a seed plot of a new beginner in the work and represents the increased growth to which heads so situated are usually stimulated. A selection of such heads for seed purpose has been found to be of no avail in attempting to improve the strain since extra growth such as this is purely the result of environment and is not reproduced. Head No. 2 represents an average head selected from the centre of the same plot, but where conditions were normal. Heads selected in this manner and which have shown themselves to be superior to others enjoying similar conditions should be selected, while heads such as No. 1 should be ignored in this work. Head No. 3 represents a good uniform type of Red Fife selected from the centre of another seed plot of the seventh year's selection. The kernels in this head are exceptionally uniform in size, completely filling the head to the tip, and are of excellent quality.

Some of the samples examined were found to be mixed more or less with other sorts, which fact demands increased vigilance on the part of the grower, who has it in his power to remove these impurities with comparative ease from the growing plot.

In some samples of wheat examined, a few heads were found to be considerably frosted, while others in the same sample were untouched. The former were evidently from plants which were somewhat late in maturing and suggests the wisdom of giving some care to selecting from plants which mature within a reasonable time.

The growing of Winter wheat is confined largely to Ontario and Alberta. In Ontario the Dawson's Golden Chaff still remains the most popular variety despite the fact that its milling qualities are below the average. Fig. III. represents a plot of this variety grown by C. R. Gies, of Heidelberg, Waterloo County, Ontario.

The prevalence of rust in most parts of Ontario has prevented the growing of this crop on a very extensive scale. Those who have endeavoured to cope with this difficulty by selecting strong vigorous plants which were able to come through an epidemic of this disease and still give creditable results have done much to show the possibilities along this line. Some samples which were examined were badly rusted, yet produced grain of excellent quality and which showed little of the effects of rust.

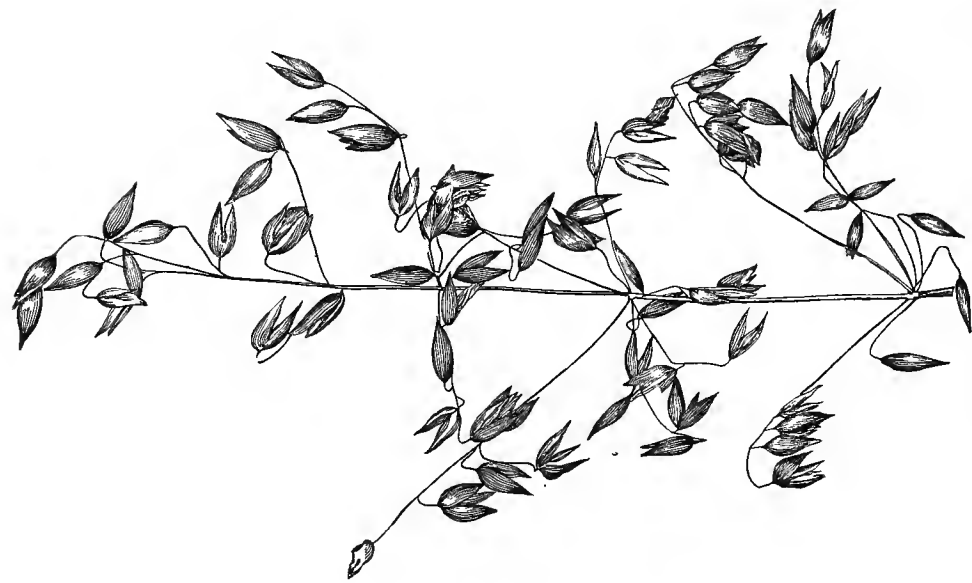


FIG. IV.—An excellent type.

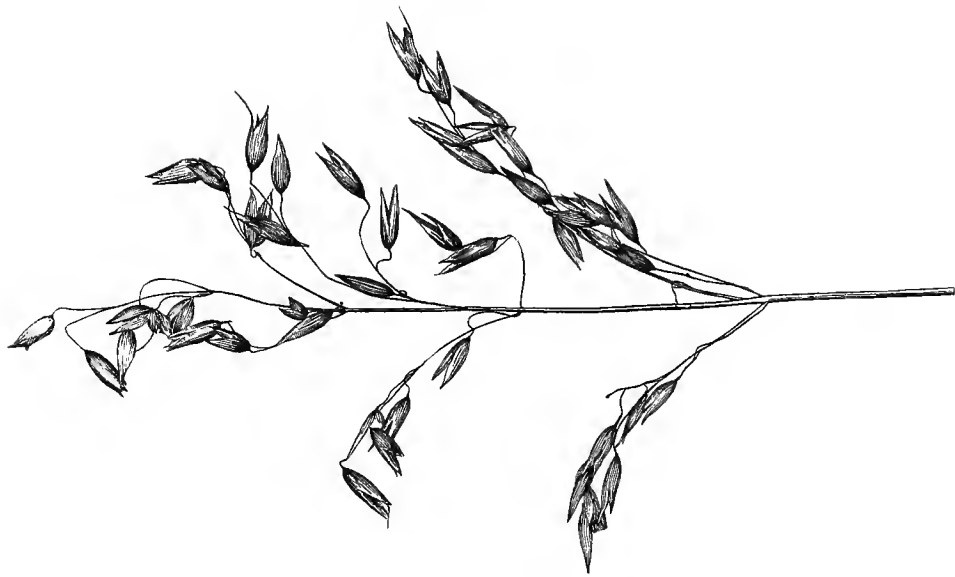


FIG. V.—An inferior type.

HEADS OF BANNER OATS.

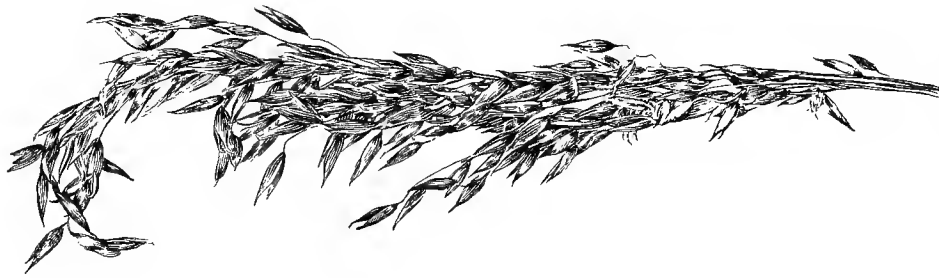


FIG. VI.—Early Blossom variety.



FIG. VII.—Tartar King variety.
(A typical side or main oat.)

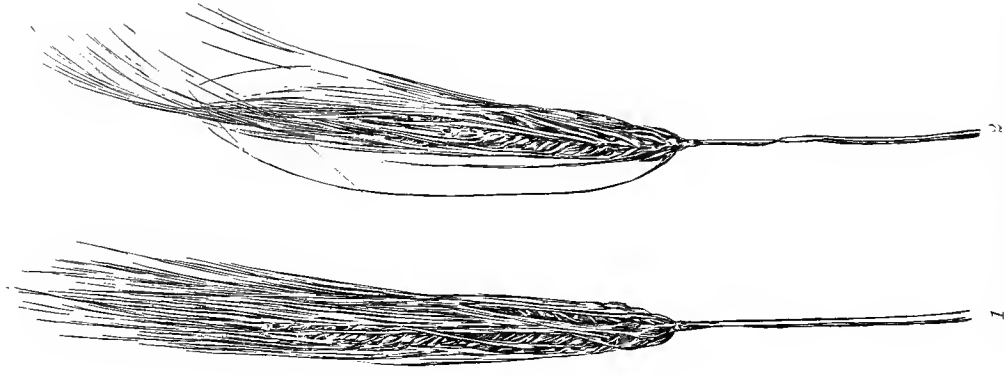


FIG. VIII.—Barley Heads. (1) Mandscheuri.
(2) Claude.

WINTER WHEAT IN ALBERTA.

Within the past year or two there has been a remarkable increase in the acreage devoted to the production of this class of wheat chiefly in the southern portions of Alberta. The variety which has replaced all others in this district is the Turkey Red or Alberta Red, as it is called by proud Albertans. The seed of this variety was first introduced from Kansas in 1904 by the Canadian Pacific Railway, and supplied at cost to those farmers who wished to give it a trial. The quality of seed now produced much excels that of the original stock, and Kansas is now directing her attention to Alberta as a source of her supply. As a milling wheat this variety is unexcelled. In Ontario this variety, though of excellent milling quality, has proven a light yielder with weak straw. In Alberta these objections do not obtain. Our several growers, therefore, who are now taking up systematic work with a view to maintaining the high standard of this variety, are fortunate in being able to start with a variety which has already proven to be so well adapted to the conditions peculiar to that province.

OATS.

Notwithstanding the large number of varieties of oats that are being circulated at the present time, the Banner variety is grown much more extensively by our members throughout all parts of Canada than is any other variety. This variety has shown a remarkable power of adapting itself to widely varying conditions; it is a good yielder with a low to medium per cent of hull to kernel which is a very desirable quality, and it possesses a stiff straw of good length. Samples of this variety grown by members in almost every province in Canada were carefully examined and the percentage of hull to kernel taken. The latter varied from 26.2 per cent to 30.4 per cent, giving an average for Banner oats for all Canada of 28.4 per cent. Fig. IV. shows an excellent type of Banner head with five nodes. The percentage of hull to kernel in the grains in this head was 26.2. Fig. V. shows a poorer type of head of the same variety with but four nodes, and hence a much less productive type. The percentage of hull to kernel in this case was 28.4.

Fig. VI. shows another type of head belonging to the Early Blossom variety. This head is very productive individually, producing a large number of short plump kernels, but which are a little too thick in the hull. The per cent of hull to kernel in this case is 30.62. Fig. VII. represents a head of Tartar King Oats grown by a member. This variety, like all 'main' or 'side oats' is very showy when growing in the field and is likely to deceive one as to its actual worth for when put to the test it is liable to be found wanting.

The straw is strong and in some localities very good results have been obtained. As a rule, however, the hull is a little too thick, causing the variety to drop somewhat as a feeding oat. The per cent of hull to kernel found on putting this head to the test was 30.8.

While individual heads cannot of themselves represent the actual value of the varieties to which they belong since they are but a part of the whole plant, yet in this particular case when everything has been taken into account the above varieties are ranked in value according to the order in which they have been considered.

Several other very good varieties are being grown, and in many cases, with very good results. While the White varieties are much more popular generally speaking yet certain Black varieties such as the Joannette, the Black Tartarian, and Black Norway are giving good results in parts of Ontario and in the Maritime Provinces. The difference between varieties in respect to their tendency to develop awns has been remarked by several of our growers, particularly in the Maritime Provinces, where in some districts there is a marked tendency in this direction.

Hot Weather Blight.—In many parts of Canada the blighting effect of hot weather on the flower and embryonic grain has been a more or less serious one during recent years. In the warmer climate across the line this difficulty is said to be much more serious. The flowers on the lower portion of the head seem to suffer most from this

condition, and at harvest time show the result in their thin white papery glumes which have been developed to so little purpose. 'The factor of earliness,' says Orton, 'seems to be closely connected with any resistance to this hot weather blight, although not infallible and not a true co-relation.' 'The growth limit in oats is determined by hot weather instead of by frost as in corn, and unlike the latter the earliest varieties come from the south. It therefore seems imperative that while experiment-station work is necessary for hybridization and for establishing methods, yet to secure best results in a series of years, the breeding of seed oats must be carried on locally.

During the past summer the oat growing possibilities of northern and central Alberta were examined. In this province the weight per measured bushel is extremely high, sometimes exceeding the 50 pounds per bushel mark. Some fields, however, were severely damaged by the above mentioned blight, while cut worms also did much harm in others. It is presumably safe to say that these difficulties can be overcome by the practising of better cultural methods and by the careful selection of seed from suitable plants. A considerable number of growers in this part of the West are realizing this and are taking up systematic work with a view to overcoming these things.

BARLEY.

Barley, though a most valuable crop, has not been receiving the attention that its importance would warrant. This is probably due to the comparative ease with which fairly good yields may be obtained with this crop in the barley growing districts of Canada. The varieties mostly grown belong to the six-rowed class of which the Mandscheuri and Mensury appear to be the most popular, particularly in Ontario. While grown more than any other varieties by our western members, yet such varieties as the Mansfield, Odessa, and Claude are also grown more or less. The latter named variety has not given sufficiently good results to warrant its continuance. The heads are generally short and the straw rather weak. In Fig. VIII, head No. 1, is representative of a characteristic Mandscheuri or a Mensury head while head No. 2 is a typical Claude. The difference between these two heads is a fair representation of their comparative values. The difference in the character and strength of straw may also be noted.

CORN.

The work of Corn Breeding, though limited chiefly to southern Ontario, has made a very material advance during the past year. Not only has the number of growers largely increased, but the general public is beginning to realize more than ever before something of the nature and importance of this particular branch of work, and as a result the demand for specially grown seed corn has increased. Keeping in close touch with the individual growers we have been able to notice a substantial growth of intelligent interest on their part until we now feel assured of the success of the work and what it will mean to the province. Moreover, the actual information which has come back to us from the work carried on by the different growers has added very materially to our present knowledge of the problems of corn breeding, and we are thus enabled to work to much better purpose.

The system of corn breeding which has been adopted by the association and which may be found in the Second Annual Report, page 59, under the section entitled: 'The row system,' has for its basis the 'ear-row test.' Each row of 50 or more hills in the plot is planted with corn from a separate ear, which arrangement gives each ear an opportunity to show the breeding which is behind it, and to which it owes its excellence. The amazing variation in the productive capacity and vigour of each ear as revealed by this system when carefully carried out, has gone far to promote a greater interest in the work. In Fig. IX. is shown by graphic expression the variation in yield between the different ears planted on a seed plot of one of our growers. These ears were all of the one variety, had all received similar treatment subsequently, and resembled

GRAPHIC EXPRESSION SHOWING VARIATION IN YIELD OF EARS OF CORN PLANTED ON BREEDING PLOT.

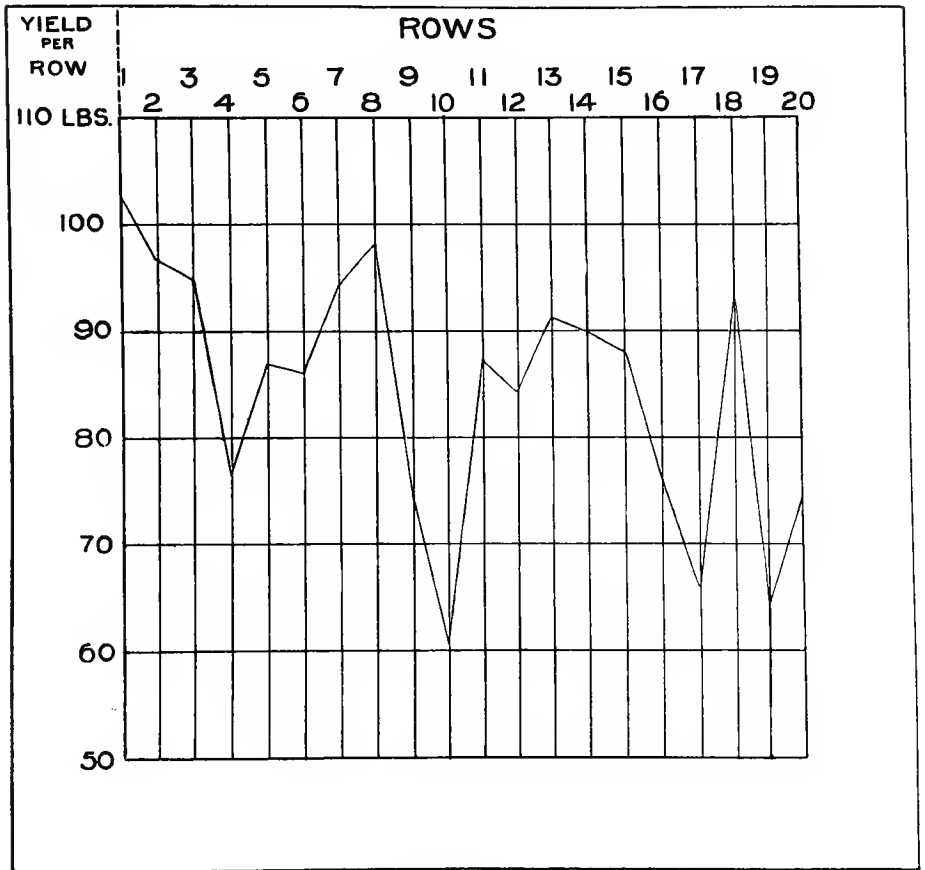


FIG IX

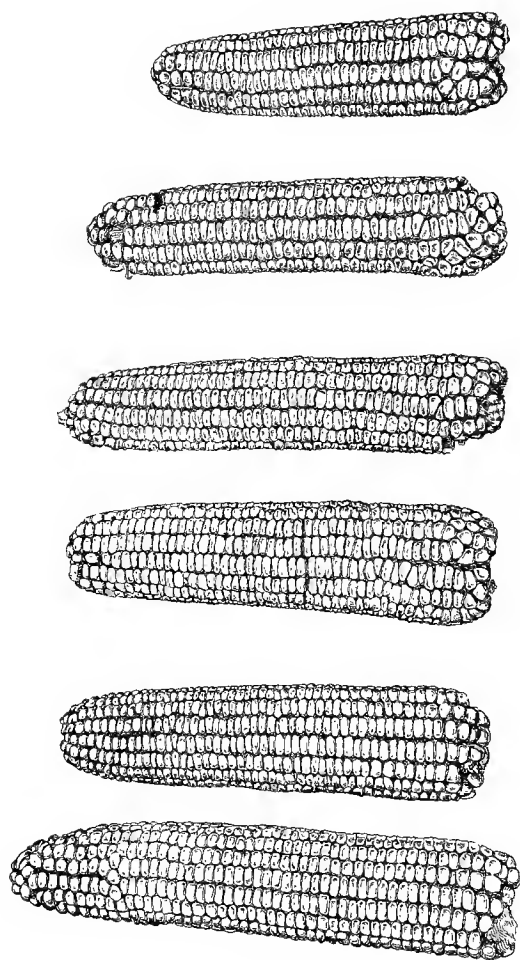


FIG. X.—Types of White Cap Yellow Dent.

each other very closely in general appearances. It will be noticed that the highest yielding ear produced 102 pounds of corn, while the lowest yielding ear produced 61 pounds. This difference of 41 pounds in yield between the two rows is equivalent to a difference of 28.5 bushels of corn per acre. In the majority of the plots operated with according to this system a decided variation was found to exist between the different rows in respect to vigour of growth, yield, &c. By this arrangement the top-notchers—the best rows—may be located and the best plants within these best rows chosen as mother plants from which to select the seed ears for the plot of the following year.

Until this year the custom was to detassel every alternate row in the plot and to select the seed ears from these detasselled plants. It was claimed for this practice that the evil effects attributed to in-breeding would be combatted. The results of this practice have not, however, been altogether satisfactory either in Canada or in the United States, and more work seems to be necessary on the part of the experiment stations before we can feel justified in going far in this direction with our members. We have, therefore, not required that detasselling be carried on this season.

Among the varieties of Dent corn operated with, the Reid's Yellow Dent and the White Cap Yellow Dent are the most popular, although many other good varieties are grown. The greater part of the Reid's variety now grown in Canada came from a sample bought at the Iowa State College, Ames, Iowa, in 1904, and brought up and given a trial in Essex County, Ontario, the following spring. This variety has shown itself to be well suited to the conditions peculiar to that county, and is spreading rapidly among the growers. The trueness with which it reproduces itself under various conditions is a strong feature in favour of this variety, and one which does not obtain to the same extent in many others. We have, for instance, almost as many different types of White Cap as we have growers. This variety seems particularly susceptible to very slight variations of climate, soil, and season. In Fig. (X) six quite distinct types of this variety are represented.

Since these Dent varieties cannot be matured to good advantage in the more northern dairy districts, it is necessary to send south for the seed and during the past year there has been an increased demand for seed which is of known origin and which has received special care, according to the regulations of our association. Where corn is grown for grain in the cooler regions of the north, the early maturing flint varieties are grown. Of this class of corn we now have several varieties represented, although the King Phillip, Longfellow, Compton's Early, and Salzer's North Dakota, are most popular. While earlier strains of the Dent varieties might be developed for the shorter seasons, yet this practice has not been recommended since early corn is believed to be antagonistic to large yields. This in the single-eared Dent varieties is particularly noticeable. Flint corns on the other hand, may produce two or three ears per stalk without difficulty and as a result a hill of three stalks of Flint corn may be made to approach in actual yield of grain a hill of three stalks of the single ear bearing Dent types. Furthermore, according to the Connecticut Agricultural Experiment Station, the feeding value of Flint corn was found to be higher than that of the Dents. While we have not advised that Flint varieties supplant the Dent varieties, yet we have endeavoured to point out that each has its own particular place and that each is capable of being improved very materially. Our Flint corn may be classified into three types. These are the long eight-rowed type, the short eight-rowed type, and the twelve-rowed type. There are many variations within each of these types as regards shape and colour of ear and number of rows of kernels.

In Fig. XI., we have an illustration showing the effect of climate upon corn. Ear No. 1 represents a type which can be depended upon to mature perfectly only in the southwestern peninsula of Ontario. Here the size of ear, depth of kernel, and proportion of corn to cob are highest. As we go north the ear becomes smaller, the kernels shorter, and the percentage of corn to cob decreases until we come to the extreme northern limit of where corn of any kind will grow and mature, when the ear becomes very small and the kernels extremely short. This type is illustrated in ear No. 5, while

the remaining four ears taken in consecutive order show the gradual effect of varying climatic conditions.

A careful study of the corn crop in Canada seems to demonstrate that wherever corn is to be improved it is always advisable to adopt a type which can be relied upon to mature thoroughly in the district; otherwise the seed will have to be often changed as a result of non-maturity of the crop, which leaves no chance to improve upon the variety by means of selection. A careful study of Fig. XII. should enable the prospective grower to decide upon the best type with which to start.

As another instance of the effect of climate upon corn and the degree to which it may be augmented by selecting for earliness we submit Fig. XII., showing two ears of Stowell's Evergreen corn. The longer ear to the right was grown in Essex county, and while an excellent ear in every physical particular, yet it is somewhat late in maturing to suit the trade. The smaller ear to the left is a good representative of a type of the same variety grown in Prince Edward county, Ontario, and which, after sixteen years of rigid selection for earliness to suit the demand of the canners, has been reduced in size to its present proportions. As a consequence this strain will now mature in from 96 to 105 days, and hence will be in condition for canning at a correspondingly early date. While the yield has suffered considerably as a result of the increase in earliness, yet the ability to place the goods on the market at such an early date has more than compensated for any loss in yield.

CORN IN WESTERN CANADA.

Within the past few years the farmers of the West have been studying the corn question with a great deal of interest. Although we do not anticipate that the West will ever become a great corn country, yet we believe that the time is not far distant when it will pay the farmer to grow more or less corn. The experimental farms at Brandon and Indian Head have for years demonstrated the possibilities of growing corn as a fodder crop while many farmers have likewise verified this. While many good types now exist in that part of Canada, and while much has been written recently on this subject, yet we believe that our experience in some of the older provinces of Canada should prove helpful to the westerner, although practically nothing has been done in the west with this crop immediately under the direction of the association.

Since Western Canada comes within the northern limit in which corn can be grown in America, and since the growing season is very short, a very early Flint variety must be looked for. Experience has shown that by careful work these early varieties may be made to produce crops which pay well for the time and labour expended upon them. It is a common practice to take some of the earlier Dent varieties and endeavour to adapt them to the new conditions in the north. We believe this to be wrong, and advise those of our western members who desire to do something along this line to begin with corn grown in the north and endeavour to improve upon this. A comparatively large number of stalks per acre each bearing at least two ears, should be looked for in this district instead of trying to develop the size of the ear.

WORK WITH POTATOES.

During the past year very material progress has been made by way of perfecting our methods of potato improvement and in instituting their application throughout the country. At the last meeting of our association, we were favoured with a very excellent paper on Potato Improvement, by Mr. W. T. Macoun, Horticulturist at the Central Experimental Farm. Upon the work which Mr. Macoun and many other authorities on this plant both at home and abroad have done, a system of potato improvement suitable for use among our members was drafted and will be applied by upwards of 50 growers this year. The system adopted is simple and practical, yet is founded on scientific principles, the individual plant being taken as the basis for improvement. The tubers produced by each plant are, morphologically considered, simply swollen portions of the vegetative and not of the reproductive system. The question has there-

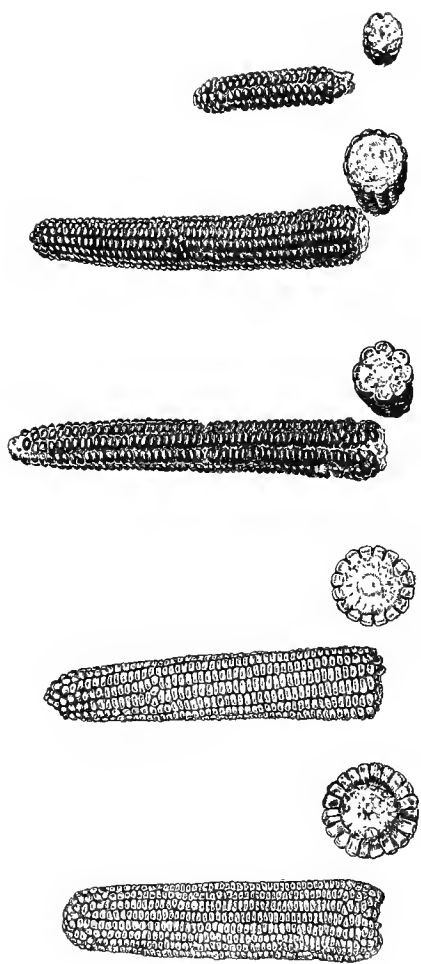


FIG. XI.—Showing the effect of climate on corn.

fore been raised as to whether or not the principles of breeding which apply in the case of sexual reproduction through the seed, obtain in asexual reproduction or perpetuation through parts of the vegetative system. Bud variation is, as a rule, more narrow than is seed variation; and some investigators claim that a part of any plant cannot possess qualities which differ materially from those of another part of the same plant. The best obtainable evidence at the present time does not support this view, and the 'individuality' of different parts is now generally recognized. Since the tubers produced by any single plant are all distinct parts of that plant, the possibility of variation in the productive capacity and in other qualities is recognized.

The system drafted for use by this association enables the grower to plant the seed tubers taken from the different hills chosen for the purpose the year previous, so that any promising variation which may result may be selected and used in endeavouring to build up a strong, healthy, and productive type.

We recommend in the first place, that a good standard variety be chosen and that the best possible seed of that variety with which to start be secured. The new beginner is advised to test two or three leading varieties the first year in small plots side by side, to keep the hills separate when digging, and after having decided which variety has given the best results, to select and keep separate 25 of the best hills of this variety for planting in the breeding plot of the following year in accordance with the regulations as drafted. While the minimum size of the seed plot recognized by the association is $\frac{1}{4}$ acre, yet in the case of potatoes it was thought advisable to depart somewhat from this rule, and to reduce the size of the plot to one consisting of 25 rows with 8 hills in each row, both rows and hills to be at least 24 inches apart. A plot of this size, it was thought, should not require more work than the average grower can well afford to expend, and more careful work on the part of the grower should be encouraged. From each of the 25 chosen hills, 8 of the most uniform, smooth, and sound tubers are then chosen and each set of 8 tubers so selected is used to plant one of the eight-hilled rows, a single whole tuber being used to plant each hill. At harvest time each row is dug separately, and the individual hills within the rows are likewise kept separate for examination. This arrangement permits the grower to determine first the best rows, and secondly, the best hills in these rows. The required number of specially desirable hills can then be laid away for planting on the plot the following spring, as above indicated. Special blank forms are sent each grower in duplicate in order that he may record certain information regarding the performance of each row, referring especially to yield, quality, and freedom from disease. While it is urged that the crop on the improved plot be sprayed for blight, yet the spraying of the breeding plot is left to the discretion of the individual grower. In districts where disease is troublesome the desirability of developing strains capable of withstanding these maladies is such that spraying is ignored and those plants which have shown the greatest power in resisting disease are chosen. The difference between varieties in their attitude toward blight and other diseases as observed at the different experiment stations, is so noticeable that the development of disease resistant strains seems to offer great possibilities.

MISCELLANEOUS CROPS.

While the crops already discussed receive the greatest degree of attention, yet many others are claiming more or less consideration. The lessons that have been and are still being taught throughout Canada by the response of our leading crops to selections of the most coveted plants therefrom for seed purposes are having their effect and the system is broadening out and embracing all classes of crops, either directly or indirectly. Such crops as Beans, Peas, Clover, Millet, Tomatoes, &c., are receiving greater attention than before, and good results are reported with many of these.

EXHIBITIONS.

At our last annual meeting detailed explanations were given of the plans that had been adopted to offer special prizes to members for creditable exhibits of Hand-Selected, Improved, and General Crop seed, that were shown at various provincial or district exhibitions. In all \$436.54 was expended by the association during the past year for this purpose. The exhibits of selected seed were always an attractive educational feature of the exhibitions, and have done much to make the work of the association better understood and more widely known and appreciated by the general public.

During the past year these exhibitions have been held in the same places as those of last year, viz.:—

(1) At Amherst, N.S., open to all members in the Maritime District, and held in connection with the Maritime Winter Fair, December 3rd to 6th inclusive.

(2) At St. Hyacinthe, Que., open only to members resident in the province of Quebec, and held on the third and fourth days of April.

(3) At Guelph, Ontario, open to members in the Ontario district, and held in connection with the Ontario Provincial Winter Fair.

(4) At Brandon, Man., open to all members resident in the district of Manitoba and Saskatchewan, and held at the time of, and in connection with the Winter Fair.

Creditable prizes were offered at each of these places for special selections of seed and plants taken from the 'Hand-Selected' and 'Improved' seed plots. The classification of the prize list provided for two sections for each of the smaller grain crops considered. Section one made provision for hand selections of plants from the standing crop on the Breeding plot. These plants were exhibited in the form of sheaves.

Section two provided for a 'Group Exhibit' consisting of a hand-selected sheaf from the Breeding plot, a half bushel of threshed seed from the same plot, and a bushel and a half of threshed seed from the 'Improved Seed Plot.'

Where prizes were offered for corn, the best ten ears were called for, the said ears to have been selected from the seed-corn plot. In the case of potatoes prizes were also offered in the east for special selections from the seed-plot. In addition to the general prizes offered a special award was made at some of the above exhibitions to the member making the most creditable showing of selected seed. This award was in the form of a handsome silver medal.

The assistance rendered each exhibitor by agreeing to pay all transportation charges over \$1 incurred in connection with the three eastern fairs, and all over \$2 in connection with the one held at Brandon, has apparently done much to encourage a good display and yet has not proven unduly expensive. This offer has been repeated this year.

Without a single exception these special exhibitions of selected seed have amply justified their establishment. The publicity that they have given the work, the interest that has been taken in the exhibits, and the service they have rendered the various exhibitors in advertising their surplus stock has proven their inestimable value to this country.

As time passes, and the general public as well as the members themselves, come to look upon these fairs in their respective districts as permanent organizations and as annual meeting places, their real place and importance will be revealed. Their perpetuation, extension and perfecting is obviously the duty of this association.

SEED CATALOGUE.

High class and registered seed has proven itself to require no eulogy. It speaks for itself, and it is our duty to let its voice be heard far and wide in order that others may learn and profit by the knowledge of what pure, high class seed really means. In order to facilitate this dissemination, a Seed Catalogue was again issued early in the winter and widely distributed throughout all parts of Canada. As before, those

whose names were to appear in the Catalogue were asked to contribute \$1 for each advertisement, to pay for the cost of issuing the catalogue.

Since the demand for this class of seed has grown more rapidly than has the supply, the amount of seed produced in 1906 and offered for sale was necessarily limited. We therefore submitted in alphabetical order the names of those in each province who might possibly be in a position to supply their neighbours with a small quantity of good seed with which to start in the work.

Together with certain information offered in connection with this catalogue, the following 'suggestions for prospective buyers' were submitted, viz.:—

(a) It is strongly recommended that seed be secured from districts as near home as possible or from those in which the natural conditions of soil, climate, &c., closely resemble those peculiar to the home farm.

(b) Do not submit to the 'variety craze,' but look for quality and productive capacity in a strain independent of variety name. In the majority of cases registered strains of those varieties which have been placed in the foremost ranks by our experiment stations will give best results.

(c) In purchasing Dent varieties of corn for ensilage purposes for the central and northern portions of Ontario, buyers should buy on the ear, demanding ears which are of medium size rather than those which are large and extremely deep kernelled. Seed of these varieties secured from districts as far north as they will thoroughly mature are considered most suitable for ensilage purposes when taken further north.

(d) The treating of oats for 'Loose Smut' is a practice which is highly recommended, as is also the treating of Seed wheat for 'Bunt' or 'Stinking Smut.' Directions for making these treatments will be given on application to the headquarters of this association.

(e) All growers are advised to apply to the secretary of the association for the Annual Reports published by this organization, if not already in their possession.

EXECUTIVE WORK.

During the past season as much attention has been given the individual grower as possible from the beginning to the end of the year. Such a policy, while most effective, necessitates that the work of each man be kept very closely in touch with, and with so many operators, a very considerable amount of work is therefore involved.

Many circular letters affecting growers in the different districts have been issued from time to time, and every effort has been taken to keep each and every member supplied with concise, up-to-date information regarding all matters pertaining to crop raising.

The following is a summary of the letters received and sent out during the year, including circular letters, reports, catalogues, &c.:—

Letters received	876
Letters sent	1,226
Different form of circular letters sent out for all provinces.	24
Reports—Third Annual (English and French)	30,000
Seed Catalogues (English and French)	6,500

Special blank forms suitable for recording certain information regarding the peculiarities and capabilities of the different crops operated with were sent the various growers during the year, and every opportunity was taken to add to our knowledge of the actual value of the strains under consideration. In order that the work necessary be simplified as much as possible, the directions sent were itemized and nothing was required of any member that was not considered absolutely essential to the success of the undertaking.

A large number of samples were sent in and examined carefully, and many things of value were discovered and recorded.

CERTIFICATES ISSUED.

The number of pounds of seed for which certificates were issued during the past year is as follows:—3,050 pounds of Improved seed, and 62,100 pounds of General Crop Seed. Practically no certificates for hand-selected seed were issued. The number of statements of transfer returned show that 30,800 pounds of seed accompanied by certificates were sold. In issuing these certificates care was exercised to avoid issuing more than were absolutely needed, and ample evidence regarding the quality of the seed had to be forthcoming before certificates were issued in any case.

In concluding this summary of the year's work, it is gratifying to feel that the association has become stronger and that it is rapidly becoming better organized. On the other hand, it is equally clear that hard, constant, and persistent work is ahead of those actively responsible for the success of this large and far-reaching undertaking. The opportunities which are presented before this association for developing a larger life and a broader sphere of usefulness are magnificent, and it is our duty to see that it measures up to its possibilities. The degree of favour in which our work is held by those from both at home and abroad, and the many letters of appreciation that have been received is encouraging.

The policy of encouraging private enterprise and initiative seems to be extremely commendable. As applied to the improving of our plants, a stage has been reached when public aid has been considered wise, and it is the duty of this association to determine how far we can go in offering such assistance.

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